

partially machined. In order to obtain concentricity of the various surfaces, it is necessary to locate the work from the taper in the hub. In order to compensate for slight variations between the taper and other finished surfaces, a tapered shell locating bushing *B* is centrally located on the stud *C* which is held in place in the faceplate fixture *E* by the nut and washer at *D*. A light coil spring *M* insures a perfect contact with the tapered surfaces, while a small pin *N* restrains the movement. As the outside of the work is to be finished during this setting, it is necessary to grip the casting in such a way that the clamps will not interfere with the cutting tools, nor cause distortion in the piece itself. With this end in view, the three lugs around the rim of the fixture are provided with shell bushings *K*, each of which is squared up at its inner end to form a jaw which is bored to a radius corresponding with the rim of the casting *L*. It is splined to receive a teat screw *J* which prevents it from turning, and it also gets a good bearing directly under the point where the work is held so that there is no danger of springing out of shape.

The bolts *F* pass through the shell bushings and are furnished with nuts *G* at their outer ends, the nuts having a knurled portion *O* which permits of rapid finger adjustment before the final tightening with a wrench. It will be seen that this construction automatically obtains a metal-to-metal contact with the thin flange of the casting without distorting it in the least, as the floating action of the bushings equalizes all variations and yet holds the work very firmly. After the clamps have been set up tightly, they are locked in position by the set-screws *H* at the rear of the fixture. This application of the floating principle may be adapted to many kinds of work, and the results obtained leave nothing to be desired. The machine for which this device was designed is a turret lathe of the horizontal type.

Two-jaw Chuck arranged with a Floating Jaw. — The work *A*, shown in Fig. 7, is a motorcycle flywheel which it was desired to machine in one setting complete. The machine to which the equipment was applied was a horizontal turret lathe. Several